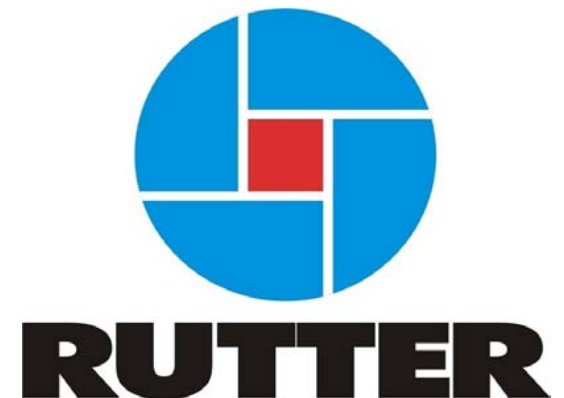# THE VOYAGE DATA RECORDER (VDR) A NEW MARINE REQUIREMENT

Byron R. Dawe

Rutter Technologies Inc.

# THE PURPOSE OF A VDR
# (INTERNATIONAL MARITIME ORGANIZATION)

The VDR's purpose is to create and maintain a secure, retrievable record of information indicating the position, movement, physical status, and command & control of a vessel for the period covering the most recent 12 hours of operation.

Applicable International Standards:

IMO A.861:1997, Performance standards for shipborne voyage data recorders

IEC 61996, Maritime navigation and radiocommunication equipment and systems – Shipborne voyage data recorder (VDR) – Methods of testing and required test results
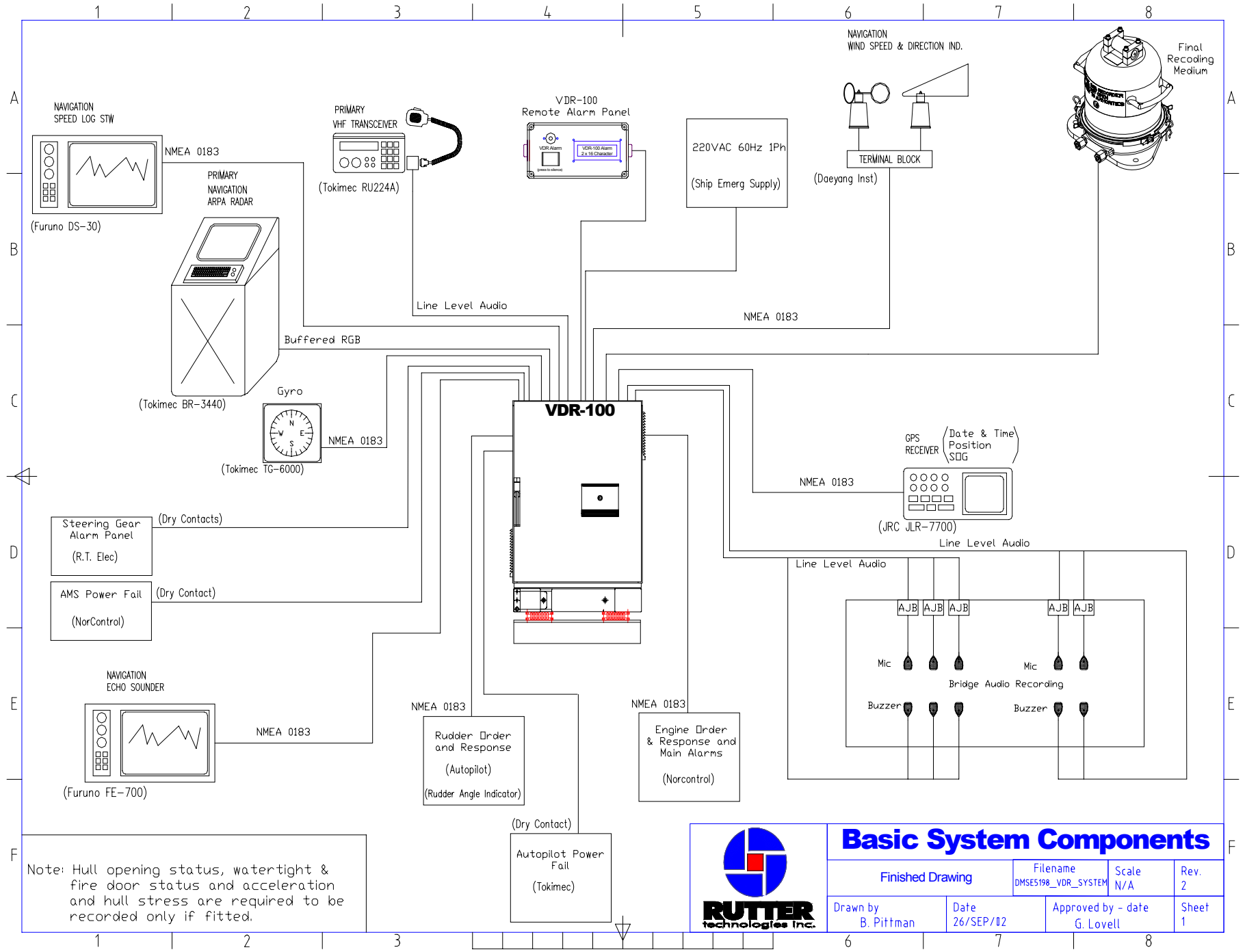
# Data Items That Must be Recorded by the VDR

IMO Resolution A.861: 1997

| Data Type | Recording Source |
|---|---|
| Date and Time | GPS |
| Latitude and Longitude | GPS |
| Speed | Speed log or GPS |
| Heading | Gyrocompass |
| Bridge Audio | Microphones |
| Communications Audio | VHF Radiotelephone |
| Radar | Radar |
| Depth | Echo sounder * |
| Main Alarms | All mandatory alarms |
| Rudder Order and Response | And autopilot if fitted |
| Engine Order and Response | And bow and stern thrusters if fitted |
| Hull Openings | All mandatory hull openings information |
| Watertight Doors and Fire Doors | All mandatory door information |
| Acceleration and Hull Stresses | Hull stress and response monitoring system * |
| Wind Speed and Direction | Anemometer * |

NAVIGATION
WIND SPEED & DIRECTION IND.

Final
Recoding
Medium

NAVIGATION
SPEED LOG STW

NMEA 0183

(Furuno DS-30)

PRIMARY
VHF TRANSCEIVER

(Tokimec RU224A)

PRIMARY
NAVIGATION
ARPA RADAR

VDR-100
Remote Alarm Panel

VDR Alarm

VDR-100 Alarm
2 x 16 Character

(press to silence)

220VAC 60Hz 1Ph

(Ship Emerg Supply)

TERMINAL BLOCK

(Daeyang Inst)

Line Level Audio

NMEA 0183

Buffered RGB

(Tokimec BR-3440)

Gyro

N
W    E
S

NMEA 0183

(Tokimec TG-6000)

VDR-100

GPS
RECEIVER

Date & Time
Position
SOG

NMEA 0183

(JRC JLR-7700)

Line Level Audio

Line Level Audio

Steering Gear
Alarm Panel

(R.T. Elec)

(Dry Contacts)

AMS Power Fail

(NorControl)

(Dry Contact)

AJB  AJB  AJB          AJB  AJB

Mic                Mic

Bridge Audio Recording

Buzzer              Buzzer

NAVIGATION
ECHO SOUNDER

NMEA 0183

(Furuno FE-700)

NMEA 0183

Rudder Order
and Response

(Autopilot)

(Rudder Angle Indicator)

NMEA 0183

Engine Order
& Response and
Main Alarms

(Norcontrol)

(Dry Contact)

Autopilot Power
Fail

(Tokimec)

Note: Hull opening status, watertight &
fire door status and acceleration
and hull stress are required to be
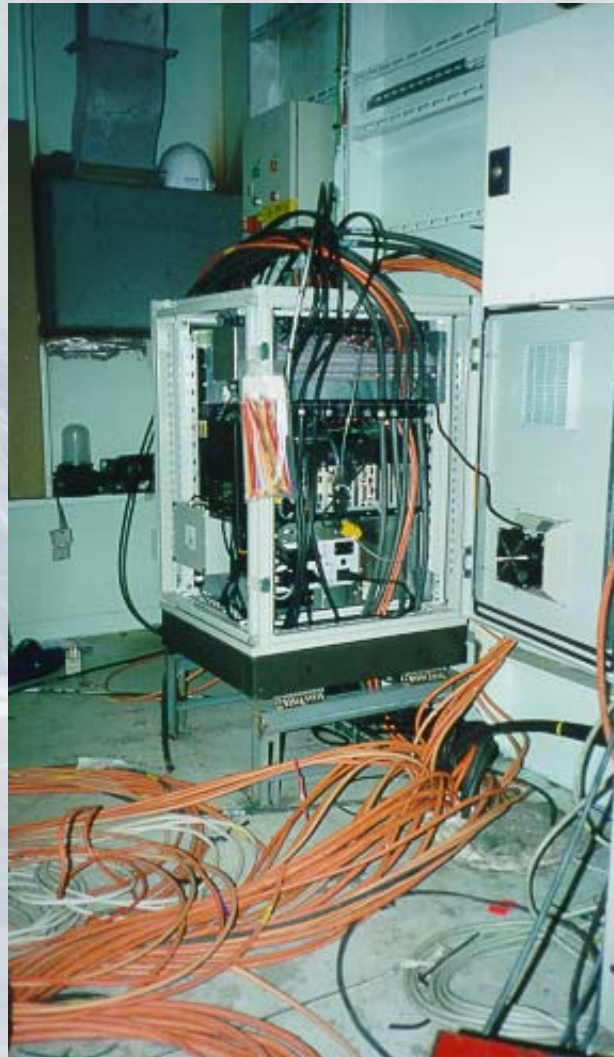recorded only if fitted.

**Basic System Components**

RUTTER
technologies inc.

# THE SYSTEM

# INSTALLING A VDR

# THE FINAL RECORDING MEDIUM

# THE CHALLENGES

- Providing a <u>tamper proof</u> system sufficiently robust to survive and operate unattended 24/7 in a questionable environment for years

- Collecting and recording data from a wide range of data sources many of which are in a non-standard form (interfacing and converting)

- Providing access to the data in a time frame and form that is useful to the customer and the investigator

# THE CHALLENGES

- Retrofitting on existing ships of all sizes and designs for which there is virtually no standardization

- Lack of clarity in the rules

- Satisfying inspectors, many of whom have their own interpretation of the rules

# THANK YOU